xcvij

Nigella rate

Nigella calida est ⁊ sicca in tercio. Virtus existit in semine. virtutē habet diuretică ex amaritudie dissoluendi cōsumēdi ex qualitatibꝫ suis. Item emplastrū factū ex farina seminis nigelle cum succo absinthei circa vmbilicū applicatū pueris lūbricos necat. Vngentū cōtra scabiem fiat decoctio pulueris nigelle in magna quantitate cū sulphure in forti aceto ad aliqualē spissitudinē addito oleo fiat inde vngentū bonū ad scabiem

Missouri Botanical Garden
Bulletin

Volume XLVII, No. 6 November, 1959

CONTENTS

Flower Prints of Five Centuries
Of Drawings Faithfully Made, Etc.
Printing Processes
Catalogue

COVER: NIGELLA. Woodcut from *Latin Herbarius*, 1484.

The exhibition of flower prints has been arranged through the courtesy of the City Art Museum in recognition of the centennial year of the Missouri Botanical Garden.

Office of publication: 306 E. Simmons Street, Galesburg, Illinois.

Editorial Office: Missouri Botanical Garden, 2315 Tower Grove Avenue, St. Louis 10, Missouri.

Published February, March, April, June, September, and November by the Board of Trustees of the Missouri Botanical Garden. Subscription price: $2.50 a year.

Entered as second-class matter January 26, 1942, at the post-office at Galesburg, Illinois, under Act of March 3, 1879.

Missouri Botanical Garden Bulletin

Vol. XLVII NOVEMBER, 1959 No. 6

FLOWER PRINTS OF FIVE CENTURIES

An Exhibition of Flower Books from the Library of the Missouri Botanical Garden

Few flower prints are found in art collections. In Whitman's *Print Collector's Handbook* as revised by Salaman, not a single such print appears nor is one even mentioned. Leonardo's drawing of a lily and Van Gogh's paintings of sunflowers are art; drawings and paintings to be reproduced as prints, such as Robert's fine delineations, Francis Bauer's exquisite paintings, Redouté's excitingly life-like lilies and roses, are usually not considered as art, nor are the prints made from them. But the techniques of the makers of flower prints are the same as those of Dürer, Rembrandt, Hogarth and Daumier; it is their intent to illustrate with life-like reality, rather than to interpret, that tends to exclude their work as art. Still, much of it is very decorative and it has commanded the attention of a large, if special group of admirers.

One seeks in vain for prehistoric drawings or paintings of flowers; plants were static and needed not, as did animals, to be figured to cast a magic spell upon them. Among the ancients plant representations were used as decorative devices and as well in murals and similar paintings portraying harvest and tax records. Shortly before the dawn of the Christian era paintings of plants began to appear in medical works. However, the great days of flower delineation date from the sixteenth century, when the flower print took its rise. This exhibition traces the development of the use of various devices such as the woodcut, the engraved copper plate, the lithographer's stone, in producing flower prints. Since these are usually the work of craftsmen who transferred to the wood, copper or stone what they saw in the artist's original painting, they reflect only at second-hand the development of flower painting itself.

The earliest books containing pictures of plants and, incidentally, of their flowers are manuscripts concerned with their medicinal properties. Among the oldest of these still extant is the great herbal of Dioscorides as rendered in 512 A.D., several hundred years after his death. It contains nearly four hundred paintings of plants, some of which are probably copies of earlier ones by Crateuas (2nd century, B.C.); others are so well drawn as to suggest they were made directly from live plants. But for nearly a thousand years after these drawings were made it is doubtful that in any other manuscript were plants represented from life. These drawings of 512 A.D. and earlier were copied and recopied until they bore little resemblance to the originals.

One of the herbals based on Dioscorides and containing such copies of earlier drawings is the *Herbarium of Pseudo-Apuleius*, a ninth century manuscript. A modern copy of this is shown in (1)*, which shows also a copy of the first printed version of this herbal. Done in 1481, this latter was the earliest illustrated printed book on botany; but its illustrations were not from life. Drawing from live plants was first again used in the *Gart der Gesundheit* of 1485; in (5) we see a 1487 edition of this work in which most of the drawings were again only copies, as are those in the *Ortus sanitatis* (6) of 1511.

It was Brunfels in 1530 who produced the first printed botanical book (7) with all its illustrations made directly from live plants. These were woodcuts made from water-color drawings of Hans Weiditz, a noted illustrator, who was a contemporary of Dürer. Modern copies of these very realistic paintings are seen in (8). Although books containing copies of earlier drawings continued to appear for many years after 1530 (in fact, have never entirely ceased to appear) the spell was broken by Brunfels; flower illustration after 1530 sought to base its laurels on representations of the living plant.

The sixteenth century witnessed the rise and decline of the botanical woodcut in the works of Brunfels (7), Fuchs (9), Mattioli (10), Bock, Dodoens (11, 12), etc. By 1600 the interest in fine detail of plant parts and the availability of etching and engraving techniques prompted the use of copper to replace wood. The development was rapid and the seventeenth century saw the production of many fine books of flower engravings, the work of such artists as Reneaulme (17), de Bry (18) and Robert (21). In general all of this was in black and white, color printing not having been invented and hand coloring not yet the vogue. But with the opening of the eighteenth century a demand for colored prints arose. At first only hand coloring was available and most of the colored prints produced before 1850 were so colored. Some of the best of this is the work of Ehret (29), Jacquin (30), Schwegmen (32) and Bauer (36). Notable exceptions to hand coloring in this period are the single-plate color prints of Kirkall (28) around 1730, and the many examples of Redouté's stipple engraving *à la poupée* (33) in the period 1800–1840.

With the nineteenth century came the lithograph. Colored lithographs were at first hand-colored (37, 38, 40, 41, 42); later they were color-printed with multiple plates (43). But throughout the century hand-colored engraving continued to appear; in (39) we see a choice example. The colored lithograph degenerated as the century wore on and most of the late-century work badly reproduces the originals after which it was made.

The present century has seen the development of new methods of color printing based on photography. Some of the best plates produced by these

---

* The numbers refer to the works listed in the catalogue.

methods are shown in (50) and (54). But the hand-colored lithographs of Lillian Snelling (53), made as late as 1940, admit little comparison.

In preparing the exhibition I have had substantial assistance from Erna Eisendrath in the selection of material, in planning its organization and in composing the catalogue; Virginia McMahon has contributed many helpful suggestions in the choice of plates and in the improvement of text. To both of these grateful acknowledgment is made.

Of the five books listed in the short bibliography below, that by Wilfrid Blunt was a constant guide to the important, the interesting and the excellent among the hundreds of titles which he had studied. Agnes Arber's *Herbals*, a rich store of knowledge about all of early botany, traces in detail and with many illustrations the history of the botanical woodcut. Claus Nissen's authoritative volume, in addition to being a detailed and complete history of botanical illustration, contains a bibliography of no less than 2387 titles which contain plant illustrations of merit; very possibly these contain more than a quarter million distinct plates. The remaining two books contain extensive analytical bibliographies of the most important eighteenth and ninteenth century flower books, many excellent reproductions of plates from these, and interesting accounts of the artists and their techniques.

— George B. Van Schaack

Bibliography

Arber, Agnes. *Herbals; Their Origin and Evolution.* A new edition. Cambridge, 1938.

Blunt, Wilfrid. *The Art of Botanical Illustration.* London, 1950.

Dunthorne, Gordon. *Flower and Fruit Prints of the 18th and Early 19th Centuries.* London, 1938.

Nissen, Claus. *Die botanische Buchillustration.* Stuttgart, 1951.

Sitwell, Sacheverell and Wilfrid Blunt. *Great Flower Books*, 1700–1900. London, 1956.

OF DRAWINGS FAITHFULLY MADE, Etc.

Illustrations of plants "have been made at different times by diverse types of artists and for diverse purposes: by bold explorers in the cause of science, and by timid spinsters to the glory of God; to record the . . . wildflowers of the . . . homeland, and to make known the gaudy exotics of distant countries; to train the eye of the botanist; to bring knowledge within the reach of the student, or a moment of fleeting pleasure to princes." (Wilfrid Blunt, *The Art of Botanical Illustration,* Collins, London, 1951, p. 262.)

Which of these shall find shelf space in a great botanical library? In a speech delivered at the first annual banquet of the Missouri Botanical Garden, Dr. William Trelease, the director, said, "A great many of the characters of plants cannot be preserved (in a herbarium); and yet a drawing faithfully made at the time when the character is well shown,—for instance, in a transient flower,—may last forever." (1st Annual Report, 1890, p. 130.)

"Drawings faithfully made" shall of course be on our shelves. Botanists call such drawings "icones," a word first used by Otto Brunfels in 1530, in the title of the very book here exhibited. The word has come to have a rather special meaning to botanists who, like most learned groups today, tend to use a private language not easily translated for outsiders. Icones may appear in regional floras, in *de luxe* tomes concerned only with the plants growing in a single garden, in learned treatises on classification, or in nurserymen's catalogues. The covering qualification which allows pictures made for such varied purposes to huddle beneath the inclusive term is that the plant portrayal be of prime importance, and not used merely as elaboration of a printed text. Corollary to this is a meaning implicit in Brunfels' *Herbarum vivae eicones.* His were living portraits of plants, and quite different from the constantly re-used and therefore increasingly less accurate figures printed by his predecessors.

It is almost pedantic to add that accuracy is not lessened by the additional quality of aesthetic satisfaction. Among our icones the two are found in variable proportions, the balance being struck not only on the basis of the purpose for which they were made, but also depending upon the date of publication. The demands of fashion in taste and interest can be followed almost as clearly through this exhibition as the line of development marking mechanical advances in the printing processes!

The earliest illustrations of plants are generally neither very accurate nor very beautiful. They appear in the herbals, early botanical books written in the days when men were most interested in the medical uses they could make of the vegetable world. This was not done on what today would be an acceptable scientific basis, and the descriptions, as well as the illustrations, seem quite naive to our sophisticated ears and eyes. This being true, we must turn again to Dr. Trelease to learn why herbals are important dwellers on the shelves of a botanical library. "No study of the cultivated plants of the present time," he wrote in the 1896

foreword to a catalogue of the Garden's collection of early books, "can be at all complete unless the minute and painstaking records of the herbalists are consulted, for, with so mutable a class of plants as our flowers, vegetables, farm crops and fruits, the tracing of their history under cultivation is no small part of their study. What is asserted of cultivated plants . . . is also true, though to a less degree, of the native plants of temperate regions."

The herbals and volumes containing icones included in this exhibition have been chosen to illustrate, through figures of plants, the development of the printer's art. The great library of the Missouri Botanical Garden contains material for exhibitions equally large, equally interesting and equally beautiful, organized on any number of other premises. It today contains some 150,000 bound volumes and pamphlets, constantly increased by the purchase of newly published books and the addition of older ones previously lacking in the collection. The library receives and keeps complete files of some 700 publications, these being perhaps the source material most usually used by researchers and students. The library's size certainly fulfills the prophecy of Sir William J. Hooker, then director of Kew Gardens, who wrote to Mr. Shaw in 1857 not only that "Very few appendages to a garden of this kind are of more importance for instruction than a library," but also that Mr. Shaw's prospective library would "become like a rolling snowball." (1st Annual Report, 1890, p. 13.)

The library became a reality in 1859 when Mr. Shaw sent his good friend, Dr. George Engelmann, abroad with a commission to assemble the books he thought essential "appendages to a garden." To these were added, in 1882, a fine collection of taxonomic works willed to the library by Dr. Engelmann, himself one of the great botanists of his day. In 1892 the snowball took what was probably its most crescent roll, as in that year Dr. Edward Lewis Sturtevant presented to the Missouri Botanical Garden his fine collection of some 500 pre-Linnean works. Most of the herbals in the present exhibition come from his collection, and in a number of the volumes Dr. Sturtevant's plant identifications can be read in his pencilled hand.

Dr. Sturtevant graduated from the Harvard Medical School in 1866, but spent most of his life in agricultural research, at first on his own farm in Massachusetts, later as first director of the New York State Agricultural Experiment Station. In the year in which he presented his library to the Garden he developed the early stages of tuberculosis. On November 5th he wrote Dr. Trelease of his plans to seek recovery in southern California, and of his hopes for the future of his great gift. "I have a strong desire," he penned, "that the library shall serve a purpose. The time will come, I well know it is not immediate, when attention will be given to the problem of the changes that mankind have effected in plants, and the defining of the limits of variation due to various factors of human interference."

Dr. Sturtevant and Dr. Trelease foresaw the same botanical value for his books, and their statements have been amply justified. But these beautiful books, both the early and the late, offer far more than the answers to restricted scholarly prob-

lems. They interest us whether or not we know a stamen from a pistil; in them we share with the artist who drew the original figures, with the woodcutter or engraver who made the plates, with the printer who fitted them carefully to his pages, with the owners who have treasured them down through the years, the love of natural beauty which starts scholars on the road to botany, and which ultimately brings these books into a museum of art.

—Erna Eisendrath

PRINTING PROCESSES

A *woodcut* is printed with a block of wood prepared by cutting away one surface to leave just those parts which are to be printed. Ink is applied to the remaining parts of the surface and the paper then pressed against it.

Etchings and *engravings* are printed with a metal plate into the surface of which the design has been cut or eaten. The printing ink is held in the depressions thus formed and is sucked out of them when the paper is pressed onto the plate.

An *etched* plate is prepared by scratching the figure through a wax coating to the surface of the plate. Acid then eats into the exposed metal.

Engraved plates are prepared in various ways: by cutting lines with a burin for *line engraving*, by incising dots for *stipple engraving*, by pushing tiny barbed wheels over the surface for *roulette engraving*. A *mezzotint* plate is prepared by first roughening the whole surface with a rocker and then scraping smooth those places not to be printed. An *aquatint* plate is prepared by coating the plate with a thin mottled deposit of rosin; those parts of the plate not to be printed are then 'stopped out' with varnish and the figure to be printed is scratched through the rosin to the metal. Upon immersing the plate in acid the figure is eaten into the plate; at the same time the acid eats the plate through the tiny holes in the rosin coating, thus making a toned effect. In many engravings two or more of the above methods may be combined, together with some use of etching.

A *lithograph* is printed with a block of limestone prepared by drawing with greasy crayon upon one of its plane surfaces the figure to be printed. After this surface is dampened and blotted, the oily ink used for printing adheres only where the crayon marked the stone.

CATALOGUE

1. APULEIUS BARBARUS. The Herbal of Pseudo-Apuleius from the ninth century manuscript in the Abbey of Monte Cassino [Codex Casinensis 97] together with the first printed edition of Joh. Phil. de Lignamine [Editio princeps Romae 1481] both in facsimile, described and annotated by F. W. T. Hunger. Leyden, Brill, 1935.

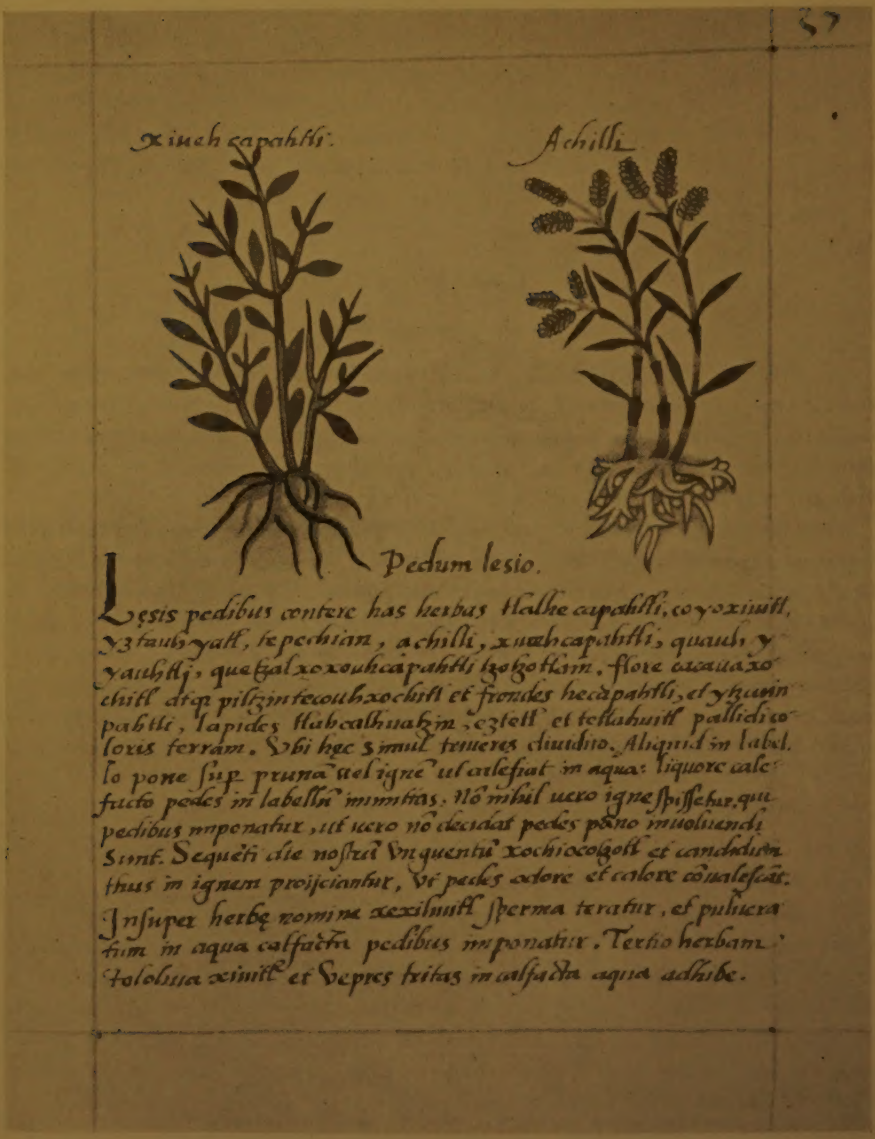
The manuscript (left-hand page) exhibits well the degeneration of plant representation characteristic of the copying which was the rule during the Dark Ages. In the editio princeps (right-hand page) the figures are even further debased. It is clear that the editio princeps is very closely related to the manuscript, but there are enough differences to make us wonder whether it was not made from another, but very similar, manuscript which has perished. In particular the figures in the manuscript are numbered in Roman numerals, those of the editio princeps are unnumbered. The editio princeps is the oldest illustrated printed book on plants.

2. THE BADIANUS MANUSCRIPT (Codex Barberini, Latin 241) Vatican Library. An Aztec herbal of 1552. Introduction, translation and annotations by Emily Walcott Emmart. Baltimore, Johns Hopkins, 1940.

Rediscovered in 1931 in the Vatican Library, this manuscript is presented in a fine facsimile edition. The original, done by two native Aztecs, is considered to be uninfluenced by European examples, although it suggests comparison with the *Herbal of Pseudo-Apuleius* and the *Ortus sanitatis*. Its figures of plants are, however, much more life-like, exhibiting the simplicity of the primitive rather than the degeneration so frequently found in mere copying. These are the earliest known American illustrations of plants, except for stylized representations in Mayan and Aztec inscriptions.

3. LEONARDO DA VINCI. Madonna lily. Copy of a study, ca. 1479.

Although the herbals of the period show astonishing disinterest in accurate representation of plants, this sole surviving example of Leonardo's many youthful flower drawings demonstrates that when drawn from life flowers could be as accurately represented in the 15th century as in any other period.



Xiuehcapahtli and Achilli. Painting and manuscript page as reproduced in *The Badianus Manuscript*. (Used by courtesy of the Johns Hopkins Press.)

The first plant is unidentified; the second is a *Polygonum*. Both were used in treating *Pedum laesio* (injury of the feet).

4. LATIN HERBARIUS. Mainz, Peter Schöffer, 1484.

This, the oldest illustrated book in the Garden's library, is perhaps unique in America. It is the first issue of a work which was later reprinted many times. It is without author and it was probably copied from a manuscript herbal. Its printer, Peter Schöffer, is considered by some to have been the inventor of printing. Although charming, its illustrations are not very realistic. The figure shows one of the wild carrots.

5. GART DER GESUNDHEIT. Augsburg, Johann Schönsperger, 1487.

In 1485, Peter Schöffer brought out a book known as *German Herbarius*, or *Herbarius zu Teutsch*, or *Gart der Gesundheit*. This German herbal was not a translation of the *Latin Herbarius*, but a new work with large figures of plants, many of them drawn from life. It was copied immediately and well by Johann Schönsperger in Augsburg, but in his third edition in 1487 he reduced the size of the type and of the illustrations, these third-hand renderings showing the usual degeneration incident to copying. Some of the figures, as that of *Aquilegia* on the left, have a life-like quality; most of them are stylized, as in the central figure.

6. ORTUS SANITATIS. Venetijs, Bernardinus Benalius et Joannes de Cereto de Tridino alias Tocuinus, 1511.

Again in Mainz, in 1491, appeared the first edition of an important work, fated to be copied and recopied. The *Ortus sanitatis*, in part at least a Latin translation of the *Gart der Gesundheit*, is more copiously illustrated. This 1511 edition, made in Venice, again shows what happens when figures are copied. On the right is the *Aquilegia*, which, since its appearance in the *Gart der Gesundheit*, has lost much of its realism.

7a. BRUNFELS, Otto. Herbarum vivae eicones. Strassbourg, Schott, 1530.

7b. BRUNFELS, Otto. Herbarium Oth. Brunfelsii Tomis Tribus Strassbourg, Schott, 1537.

8. RYTZ, Walther. Pflanzenaquerelle des Hans Weiditz aus dem Jahr 1529. Die Originale zu den Holzschnitten im Brunfels'schen Kraeuterbuch. Bern, Haupt, 1936.

Although in the late 15th century a few plants had been figured directly from life, it was Brunfels who produced the first book entirely illustrated with "living portraits of plants". Not only did he provide that many of the illustrations be at least half life-size, but in Hans Weiditz he chose a well-known artist to make them. Until thirty years ago Weiditz's original water-color drawings were unknown, but in 1930 a number of them were found in Bern; several are shown here in modern color reproductions.

Weiditz was a contemporary of Dürer and, like him, made both paintings and woodcuts. A somewhat lesser light, still his work has at times been confused with Dürer's. His meticulous attention to detail perhaps even surpasses that of Dürer, since he suppresses interpretation in favor of scientific depiction; although the result has the pleasing quality of excellence, it is a tool (a very good one!) rather than an end in itself as are Dürer's paintings.

On the left wall are exhibited two terrestrial orchids, the fall crocus and the fireweed; and on the right, narcissus, viper's bugloss and the common daisy.

9. FUCHS, Leonhart. De historia stirpium. Basel, Isingrin, 1542.

The ink was scarcely dry on the first volume (1530) of Brunfels' trail-blazing work when Fuchs produced his sumptuous herbal, of which two copies are shown.

In these fine woodcuts there is already evidence of the tendency to fill out the whole block, forming the plant to fit, which later became extreme in some of Mattioli's work. The device of bending the plant into graceful curves appears again and again in botanical illustration. One may compare here the *Passiflora* in Mutis (cf. 50).

Fuchs' volume marks the peak reached by the woodcut in portraying plants. His figures were copied and recopied with the usual results. But even original work by his successors was inferior. Perhaps the best such work is found in the large plates in some of Mattioli's editions; these are impressive as feats of representing minute detail, but are usually so crowded as to be heavy and without grace.

The plants shown here have a special interest in being two of the native American squashes, which in 1542 had been known to Europeans for less than 50 years. Fuchs was the first to publish figures of them, as also of Indian corn found elsewhere in this work.

10a. MATTIOLI, Pierandrea. Commentarii in sex libros pedacii Dioscoridis. Venice, Valgrisius, 1565.

10b. MATTIOLI, Pierandrea. Comentarii in sex libros pedacii Dioscoridis. Venice, Valgrisius, 1583.

Mattioli's first works in 1555 were illustrated with small woodcuts, but ten years later he started a series of editions with these large and beautifully done plates. Those of woody plants are the most remarkable. But there is a tendency to overload the figures, the plant being provided with so many leaves and so much fruit that an 'all-over' pattern results, the identity of the plant being obscured.

No. 10a, an incomplete copy, was recently obtained by the Garden from a local publisher who had bought it from a truck driver who had found it in an attic!

11. DODOENS, Rembert. Posteriorum trium de stirpium historia

COMMENTARIORUM IMAGINES AD VIVUM ARTIFICIOSISSIME EXPRESSAE. Antwerp, Loë, 1554.

12. DODOENS, Rembert. PURGANTIUM ALIARUMQUE EO FACIENTIUM, TUM ET RADICUM, CONVOLVULORUM AC DELETERIARUM HERBARUM HISTORIAE LIBRI III. Antwerp, Plantin, 1574.

13. CLUSIUS, Carolus. RARIORUM ALIQUOT STIRPIUM. Antwerp, Plantin, 1583.

These three works, in which we see the best that remains of the botanical woodcut, nevertheless trace its decline. In the first are Fuchs' figures used in poor copies. (Cf. 9). In the second, a good woodcut perhaps made from life still lacks the detail which is consistent with artistic quality in a metal engraving. In the last, the belladonna is charmingly done, but with a primitive quality.

14. VAN DER AST, Balthazar. STILL-LIFE: FLOWERS. 1622. (Loaned by the City Art Museum.) Oil on copper.

The flower-piece was typically a product of Holland, the vogue for it extending from about 1550 through two hundred years. Van der Ast was a distinguished painter of its earlier period. As time went on the freedom and extravagance of these works increased, culminating in those of Jan van Huysam, whose glorious paintings of flowers hang in many of the galleries of Europe. The flowers represented are iris, rose, anemone, tulip, carnation, columbine, cyclamen, forget-me-not, etc. Small animals such as flies and snails are also present.

15. CAMERARIUS, Joachim. HORTUS MEDICUS ET PHILOSOPHICUS and ICONES. Frankfurt-am-Main, Feyerabend, 1588.

One of the first books to show plant parts and dissections and one of the last to persist in the use of the woodcut, a medium obviously too coarse to permit the portrayal of exceedingly fine detail.

16. COLUMNA, Fabius. PHYTOBASANOS. Naples, Horatius Salviani, 1592.

The earliest strictly botanical work to be illustrated with intaglio plates, these being done in pure etching.

17. RENEAULME, Paul. SPECIMEN HISTORIAE PLANTARUM. Paris, Beys, 1611.

The etchings in this little volume are as fine as are to be found in a scientific work. They are truly portraits of plants, as sensitive as a Rembrandt.

18. BRY, Johann Theodor de. FLORILEGIUM NOVUM. Oppenheim, 1612–14.

This is one of the best known of the numerous florilegia of the 17th century. These were books, chiefly of pictures of the popular garden flowers, to show people what plants they might have in their gardens. The original etchings from which these beautiful engravings were copied are said to be even finer. Although not confined to bulbous and similar plants, this work is dominated by them, reflecting the low-country nativity of its author.

19. BESLER, Basil. HORTUS EYSTETTENSIS. Curis secundis. Eichstätt, 1640.

Another florilegium, this massive volume was produced to record the flowers growing in the garden of the Bishop of Eichstätt. The illustrations are in the grand manner, often highly decorative, if not always accurate and fine.

20. SWEERTS. Emanuel. FLORILEGIUM AMPLISSIMUM ET SELECTISSIMUM. [Part 1]. Amsterdam, Frederich de Wit, [1612]; and FLORILEGII PARS SECUNDA. Amsterdam, Jo. Jannson, 1654.

The plates of Sweerts' florilegium are in many cases copies of those of de Bry. According to W. Blunt this work, in at least one of its editions, indicated where the plants figured could be purchased and is thus in a sense an early sale catalogue.

21. DODART, Denis. MÉMOIRES POUR SERVIR À L'HISTOIRE DES PLANTES. Paris, Impr. royale, 1676.

The work of Nicolas Robert, who both drew and engraved the plates of this volume, was unsurpassed in the 17th century. The plant shown is the cross vine (*Bignonia capreolata* L.), which may be seen flowering in mid-summer in southern Missouri and from there further south.

22. COMMELIN, Jan. HORTI MEDICI AMSTELODAMENSIS. Volume 1. Amsterdam, Blaeu, 1697.

23. AUBRIET, Claude. HELLEBORUS ORIENTALIS. Plate 45 from Desfontaines, *Choix de plantes*, 1808.

This beautiful stipple engraving was made by Lambert from a water-color drawing of Aubriet drawn nearly a hundred years earlier. Fine as it is, it gives little hint of the original which is well reproduced in Blunt, *The Art of Botanical Illustration*, plate 11. Stipple engraving developed toward the end of the 18th century and was at its height during the first quarter of the 19th century. In its

---

PASSION FLOWER. Copper engraving from J. T. de Bry, *Florilegium novum*. This plate served as title page for the second addition in 1614.

Augmentatio uberior Florilegij antehac coepti, nunc iterum locupletata, floribus nonnullis exoticis, visu jucundis p. Joh. Theodor de Bry.

Fernere Vermehrung des Blumbuchs, so vor disem angefangen, vnd jetz wiederum verbessert mit zusatz etlicher fremden, lieblichen blumen

Anno 1614.

Flos Passionalis, sive Grenadille ex India.

Floruit mense Augusto Anni 1612. in horto Illustris Robini Herbarij Regiæ Majestat in Gallia. Ubi depictum a quodam, qui vocatur Anglus. Conspectus est a multis Religiosis præsertim Capucinis et alijs. affirmat aut Robinus sibi allatam ex Insula Canada.

N. Descamps herborista de la Roine Regente.

Corona (clavorum instar) in summitate Tubuli, ex Staminibus Superioribus cum viridibus et parte inferiore rubicunda exalbido-virescens sanguineis conspersis punctulis.

Folia 5 exterius luteo, in medius albo colore, quorum caulesculi in totum virides sunt, conspersi obscure sang. punctis.

Circulus umbilico proximus, cum reliquis staminibus ut et Stamenodis purpureo-violaceo.

Matrix 10 folia albo lacteo colore ut et caules virido colore.

Stirps huius alba, cum nervis, rubescit.

pure form it employed no line; in this example lines have been added to shade the leaves.

24. PLUMIER, Charles. PLANTARUM AMERICANARUM. Amsterdam, Auctor & Schouten, 1755–60. Plate 193.

Plumier was not only a botanist, but was prolific in the production of botanical drawings as well. In general these are in outline and many of them are rather pleasing (cf. 51). Others, as the one shown here, are little more than elaborate diagrams, certainly useful, but in a limited fashion, lacking the touch of life that more clever artists could give. Comparing this plate with the Aubriet opposite we are reminded of Dürer's words: "Je genauer man dem Leben und der Natur mit Abnehmen nachkommt, je besser und künstlicher Dein Werk wird." (The more closely one copies life and nature the better and more artistic will be his work.)

25. RHEEDE TOT DRAAKESTEIN, Henricus van. HORTUS INDICUS MALABARICUS. Amsterdam, 1678–1703.

One of the earliest and still today one of the most elaborate and celebrated works on plants of India, this twelve-volume set contains 794 double-page black and white plates from copper engravings. The double page permits life-size figures, and what they may lack in refinement is more than made up in the vitality produced by strong lines boldly drawn. Most of the plates bear the plant name in Latin, Malabaric, Brahman and Arabic.

26a. DILLENIUS, Johann Jakob. HORTUS ELTHAMENSIS. London, 1732.

26b. DILLENIUS, Johann Jakob. HORTUS ELTHAMENSIS. Leyden, 1774.

Dillenius, a German, became the first Sherardian Professor at Oxford, having produced this catalog of the plants grown by James Sherard in Eltham. Not only did he make the drawings, more than three hundred of them, but he did the engravings as well, except for plate 324, shown at the right. Noting the fine quality of this single plate we see clearly the difference between professional skill and that of a diligent amateur.

27. BLUNT, W. GEORGE DIONYSIUS EHRET. Twelve reproductions from the original paintings on vellum with an introduction and descriptive text. Guildford, 1953. One plate: The superb lily (*Lilium superbum*).

An account of Ehret is found under Trew (29).

28. SOCIETY OF GARDENERS. CATALOGUS PLANTARUM; A CATALOGUE

DOUBLE NASTURTIUM, ETC. Color mezzotint by Kirkall, after a painting by van Huysum; from Society of Gardeners, *Catalogus Plantarum*.

OF TREES, SHRUBS, PLANTS AND FLOWERS . . . PROPAGATED . . . NEAR LONDON BY A SOCIETY OF GARDENERS. London, 1730.

This work and its immediate predecessor, John Martyn's *Historia Plantarum Rariorum* (1728), mark the beginning of color printing in flower illustration. Many of the plates are mezzotints printed in color, the various colors, usually only two or three, having been all applied at the same time. The paintings were by Jacob van Huysum, whose brother Jan was the more famous Dutch flower painter. The engravings were made by Kirkall, who was experimenting with single plate color printing. The results varied greatly and had usually to be supplemented by hand retouching. In the plate shown the green and brown are printed, the blue and yellow added by hand.

29. TREW, Christopher Jacob. PLANTAE SELECTAE. Nuremberg, 1750–73.

The paintings for this elaborate work are by George Dionysius Ehret, a German, contemporary of Linnaeus, resident most of his life in England. He was one of the most outstanding of all artists of flowers, and very prolific. One of his paintings, reproduced by modern color processes, is shown on the wall at the left; what it became in the hands of the engraver and with hand coloring is seen in the plate shown here.

30. JACQUIN, Nicolaus Joseph. HORTUS BOTANICUS VINDOBONENSIS. Vienna, 1770–76.

Jacquin was one of the most prolific authors of the late 18th century. In addition to several smaller volumes he produced works comprising fifteen folio volumes of this size or larger, partly illustrated by himself, partly by a large corps of artists whom he assembled in Vienna at the Vienna Botanical Garden. The work shown relates to plants grown in this garden, and was produced under the patronage of Queen Maria Theresa.

31. PALLAS, Petro Simone. FLORA ROSSICA. Petropoli, 1784.

While Jacquin was enjoying Maria Theresa's support, Pallas flourished in Russia under that of Empress Catherine. His travels took him to central Asia and far Siberia, in which latter place he found the gentian shown in the plate.

32. SCHNEEVOOGT, G. Voorhelm. ICONES PLANTARUM RARIORUM; DELINEAVIT ET IN AES INCIDIT H. SCHWEGMAN. Haerlem, 1793.

Schwegman did his own engraving (and coloring?) which may account for the fine quality of this plate. This volume is often considered the Dutch flower

KAMTCHATKA RHODODENDRON. Hand-colored engraving from P. S. Pallas, *Flora rossica*.

book of first rank produced in the 18th century. The plant shown is an orchid of the genus *Phaius*, related to the well-known *Cymbidiums*.

33. REDOUTÉ, Pierre Joseph. LES LILIACÉES. Paris, 1802–16.

Of all flower prints those made from Redouté's paintings have enjoyed the most acclaim. He produced so many fine plates of such elegance that few have not seen examples of his work. The volume exhibited is one of a set of eight devoted to the lilies and their relatives.

The technique used is stipple engraving, printed in color, retouched by hand. The engravers who transferred Redouté's work to metal were extremely skillful; Langlois (shown) was perhaps the best. The printing was done *à la poupée*, that is, the plate was daubed in various colors with small tightly knotted cloths resembling rag dolls (*poupées*) and then the whole thing printed at once; one can imagine the delicacy with which it was necessary to handle the *poupées* that the colors should not get mixed!

This particular set is unusual in having a proof print in black for each color print. The reason for this is not clear, but it affords a fine opportunity to study the effect of the color.

34. L'HERITIER DE BRUTELLE, Charles Louis. STIRPES NOVAE, AUT MINUS COGNITAE. Paris, 1784–85.

It is Redouté's work reproduced *à la poupée* (cf. 33) in *Les Roses*, *Les Liliacées*, etc., in the early 19th century upon which his popularity seems to be based. But he produced many works which appeared then and earlier in uncolored engravings, both line and stipple. Of his colored line engravings the work shown here was done before he had gone to England to study stipple engraving. The engraved lines were printed in various colored inks,—green for the leaves, brown for the stems, etc., all of the colors being printed at the same time. Within the outlines thus produced the print was then colored by hand. Comparison of the result with that produced by the later method seen in No. 33 suggests that the latter was a logical development of the former. Redouté was striving for continuous toning, possible in his later stipple engravings, but only suggested here where the darker lines tend to destroy the continuity. He succeeded in his quest, but did his success not eliminate a certain artistic quality which these earlier prints have?

35. THORNTON, Robert John. NEW ILLUSTRATION OF THE SEXUAL SYSTEM OF CAROLUS LINNAEUS. London, 1799–1807.

LIMODORUM TANKERVILLIAE. Hand-colored engraving by H. Schwegman; from G. V. Schneevoogt, *Icones plantarum rariorum*.

One of the heaviest volumes in all of botany and one of the least important. Its Part Three: *The Temple of Flora*, however, has enjoyed a popularity second to none because of its elaborately produced and often decorative plates. The equally elaborate text, not often very informative, is replete with the romantic poetry about flowers which was so popular around 1800.

The plates were engraved by various processes, partly printed in color, partly finished by hand, frequently changed from time to time as the publication proceeded. No two copies of the work contain the same selection of plates. Apparently as orders came in for a copy or two the author had bound up whatever happened to be on hand. As it was, the venture ruined him financially for life; with such expensive plates he couldn't always have available a complete set.

The plate shows the night-blooming cereus of Jamaica, content in an English churchyard! As if foreshadowing the multiplicity of credits attributed in a modern film production, the flower was the work of Reinagle, while the moonlight was supplied by Pether.

36. LAMBERT, Aylmer Bourke. A DESCRIPTION OF THE GENUS PINUS. London, 1803.

Most of the illustrations in this work were drawn by Ferdinand Bauer who was most fortunate in his engravers. These plates were the particular joy of the German poet, Goethe, who praised them many times and who said that in them "Nature is visible, Art concealed." This copy is one of the few to be colored, probably by William Hooker, a pupil of Francis Bauer, brother of Ferdinand.

The plate shows a larch, not now considered to belong to the same genus as the pines.

37. [KER, C. H. B.] ICONES PICTAE INDO-ASIATICAE PLANTARUM EXCERPTAE E CODICIBUS DOM: CATTLEY. London, 1818.

This slender volume contains some very charmingly hand-colored lithographs and etchings. It is apparently quite rare, being a sort of incomplete pre-issue of a fuller work appearing in 1820. The library at Kew is said to have a more complete copy with the same title page and an advertisement signed by W. Cattley (after whom the orchid *Cattleya* is named), stating that of the thirty figures "twenty-four were printed on stone and were drawn by Mr. H. B. Ker."

38. WALLICH, Nathaniel. PLANTAE ASIATICAE RARIORES. London, 1830–32.

By no means all of the flower paintings and drawings reproduced in Europe were made by European artists. For Wallich's large three volume work dealing with rare Asian plants the original drawings were made by a corps of native artists

MORNING-GLORY. Hand-colored lithograph by Gauci, after a painting by Vishnupersaud; from N. Wallich, *Plantarum Asiaticae rariorum*.

in India, of whom Vishnupersaud was foremost. Gauci's fine lithographs of these drawings were colored by hand.

39. BURY, Mrs. Edward. A Selection of Hexandrian Plants. London, 1831-34.

Mrs. Bury, a self-styled amateur, was most fortunate in her engraver, R. Havell, whose fame rests on his work in producing the Audubon bird prints. The plates in this volume are aquatints, partly printed in color, but finished by hand, the hand of R. Havell himself. They are certainly among the most decorative of all flower prints.

40. HOOKER, Joseph Dalton. The Rhododendrons of Sikkim-Himalaya. London, 1849.

The fine hand-colored lithographs in this work are by the distinguished Walter Hood Fitch, who produced a steady stream of botanical drawings for fifty years. These particular ones are from Hooker's own sketches made on a botanical trip to India.

41. BATEMAN, James. The Orchidaceae of Mexico and Guatemala. London, 1837-43.

This is the largest and heaviest botanical work ever produced. Its handsome hand-colored lithographs were made from paintings by Mrs. Withers, Miss Drake and others, by Gauci, who had done those of Wallich (38).

42. MARTIUS, Karl Friedrich Philipp von. Historia naturalis palmarum. Munich, Leipzig, 1823-50.

A monumental three-volume work on palms with 240 hand-colored lithographs.

43. ALLEN, John Fisk. Victoria regia, or the great water lily of America. Boston, Dutton and Wentworth. 1854. (Single plate only).

Sumptuously done colored flower prints appeared rarely in this country. The one shown is a chromo-lithograph, very decorative, if a little stiff. According to the title page the illustrations for this work were "by William Sharp, from specimens grown at Salem, Massachusetts, U.S.A." Three years earlier in England Sir Wm. Jackson Hooker brought out another sumptuous folio volume with illustrations of *Victoria regia* by W. H. Fitch. Comparison of the two works makes one wonder if identical groupings of plants grew in England and in Salem. Copying plant illustrations will never die!

Pinus Elliottii. Lithograph *by P. Roetter;* from G. Engelmann, *Revision of the genus Pinus, and a description of Pinus Elliottii.*

PINUS ELLIOTTII. Engelm

Print by A. Meisel

Victoria Regia, native of the marshes of the upper Amazon, may be seen any summer blossoming in the lily pools at the Missouri Botanical Garden.

44. ENGELMANN, George. Revision of the genus Pinus, and a description of Pinus Elliottii. St. Louis, 1880.

This publication has special interest as being purely a product of St. Louis. Dr. George Engelmann, a German physician, settled here before 1840 and for over forty years thereafter was not only the pre-eminent scientist of the region, but one of the three outstanding botanists of the whole country. It was he who counselled Henry Shaw to make of the Missouri Botanical Garden a scientific institution rather than merely a show place. He was one of the founders of the St. Louis Academy of Science, in the Transactions of which the work exhibited first appeared. The drawings were made directly on stone by a local artist, P. Roetter, whose work is certainly of excellent quality. For another very extensive publication of Engelmann, *The Cactaceae of the Boundary*, Roetter drew a series of 76 excellent figures which Engelmann took to Paris to be engraved under the direction of the same Picart who did many of the plates for Sargent's great *Silva of North America* (45).

45. SARGENT, Charles Sprague. The Silva of North America. A description of the trees which grow naturally in North America exclusive of Mexico. Boston and New York, 1891-1902.

This fourteen-volume work contains 740 uncolored plates drawn by C. E. Faxon who, in Sargent's words, "united accuracy with graceful composition and softness of outline". Faxon was an American, but his drawings were engraved in Paris. These plates show well how roulette engraving gives a crispness to the plate, but at the same time leaves the outline and shading soft rather than hard.

46. CURTIS, William. The Botanical Magazine. London, 1787– .

This great serial has been published continuously for over one hundred seventy years. Initially a private enterprise of William Curtis, it is now a publication of the Royal Horticultural Society. In all it contains nearly ten thousand colored drawings of plants, most of them introduced into cultivation in England. Quite remarkable is the fact that until 1948 all of the plates were colored by hand. The seven plates show the various ways in which different artists have treated the peony; they range in date from 1812 to 1952.

47. LINNAEUS, Carolus. Hortus Cliffortianus. Amsterdam, 1737.

Of all Linnaeus' works this is the only one elaborately produced, having been supported by a rich banker, George Clifford of Harlem, whose botanical garden is

the subject of the book. It was illustrated by the then young George Ehret and J. Wandelaar. The latter not only contributed this fascinating frontispiece, but supplied a poem to explain it. According to this, Mother Earth, with the support of Clifford's enterprise and the pen of Linnaeus, here receives and propagates the plants of distant lands, and now through all seasons may Europe enjoy the noblest plants, fruits and flowers of Asia, Africa and America.

48. SIBTHORP, John S. FLORA GRAECA. London, 1806-40. (1845-56 reprint).

Each of the ten volumes of this monumental work on the plants of the eastern Mediterranean has a frontispiece with a different scene from that region. Each of these is further decorated with flowers from the groups of plants treated in the volume. Volume 8 (exhibited) is devoted to plants of the pea family.

49. BLUME, Carl Ludwig. COLLECTION DES ORCHIDÉES LES PLUS REMARQUABLES DE L'ARCHIPEL INDIEN ET DU JAPON. Amsterdam, 1858.

The frontispiece, elaborately decorated with orchids, is a lithograph partly printed in color.

50. FLORA DE LA REAL EXPEDICION BOTANICA DEL NUEVO REINO DE GRANADA. Madrid, 1954– .

A fine example of modern color reproduction, published in the grand manner. The paintings, however, date from the late 18th century, having been made under the direction of Don José Celestino Mutis, who led an extended botanical expedition to what is now Colombia. The plate shown is a rather extreme example of the tendency of all Mutis' artists to "arrange" the plants in what they considered pleasing designs.

The exhibits at left and right (51 and 52) show other treatments of the same plant, a passion flower.

51. PLUMIER, Charles. DESCRIPTION DES PLANTES DE L'AMERIQUE. Paris, 1693.

52. JACQUIN, Nicolaus Joseph. HORTUS BOTANICUS VINDOBONENSIS. Vienna, 1770-76.

53. GROVE, Arthur and A. D. COTTON. A SUPPLEMENT TO ELWES' MONOGRAPH OF THE GENUS LILIUM. London, 1934-40.

These fine plates, which are lithographs by Lillian Snelling, have been most

skillfully colored. In excellence they are doubtfully surpassed as botanical color prints by anything done in the last hundred years.

54. DESCOLE, Horatius R., ed. GENERA ET SPECIES PLANTARUM ARGENTINARUM. Buenos Aires, 1943- .

The day of the oversize volume in botanical publishing is not over; less than twenty years ago Argentina embarked upon the production of this sumptuous 'flora' in the grand manner, to be illustrated with elaborate drawings, many of them colored. Five volumes have appeared. The color-plate work varies in quality, —at its best it uses our modern machine methods to as good advantage as the older methods were being used a hundred years or more ago.

55. IINUMA, Yokusai. SOMOKU-DZUSETSU. Rev. ed. Ogaki, 1874.

These effective Japanese woodcuts show the convention of representing the upper surface of the leaf black, the under, white. Color is little used, except occasionally for the flower or a part of it.

56. KOCH, Rudolf. DAS BLUMENBUCH. Zeichnungen von Rudolf Koch in Holz geschnitten von Fritz Kredel. Darmstadt, 1929-30. (Loaned by Mr. Emil de Leuw).

A modern German florilegium with woodcuts reminiscent of those of four hundred years earlier. Privately printed for a German book society.

57. VELICK, Bernadette. INK DRAWING. 1959.

This original ink drawing was made at the Missouri Botanical Garden by Bernadette Velick of St. Louis. Beside it is the commercially produced engraving to be used as an illustration in an article on plants of Panama which will appear next spring in the Garden's Annals.

58. NANNFELDT, John Axel, and G. Einar DU RIETZ. VILDA VAXTER I NORDEN. Stockholm, 1952.

As so much of the handwork in this exhibition manifests, it is "understanding" and its reflection which the artist brings to the making of a flower print. It is doubtful that any camera can equal this in effect, but just as doubtfully could any eye and hand depict so well the sheer complexity of plant life as we see it here in these fine color-photo reproductions.

GENERAL INDEX

Agavaceae, 71
Aizoaceae, 72
Alexander, Mrs. Campbell, 27
Allen, John Fisk, 114
Anderson, Dr. Edgar, 32, 34, 43, 44
Andrews, Dean Henry N., 32
Andrews, Mary Beth, 47, 91
Apuleius Barbarus, 99
Aquatint, 98
Arboretum, 39
Asclepiadaceae, 69
Attendance, 38
Aubriet, Claude, 104
Aztec Herbal, 99, 100

Badianus Manuscript, 99, 100
Barbre, Clarence, 34
Bateman, James, 114
Bauer, Ferdinand, 112
Besler, Basil, 104
Blumē, Carl Ludwig, 117
Blunt, W., 106
Book Reviews: Mariano Ospina Hernandez's "Colombian Orchids," 47; Julian A. Steyermark's "Vegetational History of the Ozark Forest," 89
Bowman, Helen, 47
Brunfels, Otto, 101
Bry, Johann Theodor de, 103, 105
Bunting, George S., 77, 83
Bury, Mrs. Edward, 114

Cactaceae, 66
Camerarius, Joachim, 103
Cannas for St. Louis, Old-fashioned, 42
Catalogue, 99
Cattleyas and their allies, 3
Climatron. Report on construction, 81; Planting, 82
Clusius, Carolus, 103
Columna, Fabius, 103
Commelin, Jan, 104
Cotton, A. D., 117
Crassulaceae, 73
Crateuas, 93
Curtis, William, 116
Cutak, Ladislaus, 49
Cutler, Hugh C., 25
Cymbidiums, 13
Cypripediums, 12

Davies, Josephine, 26, 47, 91
Descole, Horatius R., 118
Desertariums and dish gardens, 57
Dillenius, Johann Jakob, 106
Dioscorides, 93
Dish gardens and desertariums, 37
Dodart, Denis, 104
Dodens, Rembert, 102, 103
Du Rietz, G. Einar, 118

Education programs, 34, 44; Summer nature classes, 45; Tours, 44; Saturday activities, 45; Pitzman nature program summer 1959, 46; Junior research teams, 91; Chart, 92
Ehret, George Dionysius, 106, 108, 117
Eisendrath, Erna, 98
Engelmann, Dr. George, 97, 115, 116
Engravings, 98
Etchings, 98
Euphorbiaceae, 68
Evinger, Edgar L., 35, 82
Exhibition and flower shows, 35; exhibition of flower books, 93

Faxon, C. E., 116
Fitch, W. H., 114
Flora de la real expedición del Nuevo Reino de Granada, 117
Flower Prints of Five Centuries, 93
Flower sermon, 36
Flower shows, 35
Fuchs, Leonhart, 102

Gart der Gesundheit, 101
Gauci, M., 114
Gillespie, Robert J., 1, 34; Review of Mariano Ospina Hernandez's "Colombian Orchids," 47
Greenhouses, 35
Grove, Arthur, 117

Hath, Earl H., 47
Hath, Mrs. Earl H., 27, 39, 47
Havell, R., 114
Herbarium, 30
Herbarius zu Teutsch, 101
L'Héritier de Brutelle, Charles Louis, 111
Hooker, Joseph Dalton, 114
Hooker, Sr. William J., 97, 114
Hooker, William, 112

Iinuma, Yokusai, 118
Information Center, 38
Ivy and Plumbago, 43

Jacquin, Nicolaus Joseph, 108, 117

Ker, C. H. B., 112
Kirkall, 108
Knapp, Mrs. Hazel L., 27
Koch, Rudolf, 118

Lambert, Aylmer Bourke, 112
Lambert, J. B., 23
Latin herbarius, cover No. 6, 101
Leonardo da Vinci, 99
Library, 33
Liliaceae, 70
Linnaeus, Carolus, 86, 116
Lithograph, 98
Little-known facts on a well-known plant, 77

Maintenance, 37
Martius, Karl Friederich Philipp von, 114
Martyn, John K., 108
Mattioli, Pierandrea, 102
McCready, Frank, 39
Mezzotint, 98
Missouri Botanical Garden in 1958, 25
Nannfeldt, John Axel, 118
National Council of State Garden Clubs Headquarters, 39
Nature prepares for winter, 87
Nickerson, Dr. Norton H., 26, 34
Niedringhaus, Carolyn Lee, 39
Nigella, cover November BULLETIN

O'Byrne, Mrs. Stuart, 47
O'Bryne, Stuart, 47
Odontoglossums, 15
Of Drawings Faithfully Made, etc., 96
Orchid culture, 1; diseases, 19; culture chart, 23; department, 34
Ortus sanitatis, 101

Pallas, Petro Simone, 108, 109
Peck, Kenneth O., 44, 47, 91
Pether, Abraham, 112
Philodendron, cover September BULLETIN; 77, 80
Picart, Eugene, 116
Pitzman nature program summer 1959, 46; Junior research teams, 91; chart, 92
Plants in relation to climate, 48
Plant introductions, 35
Plumbago and Ivy, 43
Plumier, Charles, 106, 117
Printing Processes, 98

Redouté, Pierre Joseph, 111
Reinagle, Philipp, 112
Reneaulme, Paul, 103
Rheede tot Draakestein, Henricus van, 106
Robert, Nicolas, 104
Roetter, P., 116
Rouk, Hugh, 32
Rouk, Mrs. Hazel, 32
Rytz, Walther, 101

Sargent, Charles Sprague, 116
Saturday activities, 45
Schneevoogt, G. Voorhelm, 108
Schöffer, Peter, 101
Schönsperger, Johann, 101
Schwegman, H., 108; facing 111
Sharp, William, 114
Shaw, Henry, 28
Shaw House, 39
Sibthorp, John S., 117
Snelling, Lillian, 117
Society of Gardeners, 106, 107
Start, Clarissa, 41
Stern, Jeane, 47
Sturtevant, Dr. Edward Lewis, 97
Succulents, 49; culture and care, 51; in the garden, 53; hardy, 54; as house plants, 56; making desertariums and dish gardens, 57; propagation, 59; cactaceae, 66; Euphorbiaceae, 68; Asclepiadaceae, 69; Liliaceae, 70; Agavaceae, 71; Aizoaceae, 72; Crassulaceae, 73; miscellaneous, 75
Summer nature classes, 45
Sweerts, Emanuel, 104
Symposium, Systematics, 26

Thornton, Robert John, 111
Tours, 44
Trelease, Dr. William, 96, 97
Trew, Christopher Jacob, 108
Tucker, Mayor Raymond R., 25

Vandas, 18
Van der Ast, Balthazar, 103
Van Schaack, George B., 95
Veiled Prophet Queen, 39
Velick, Bernadette, 118
Vishnupersaud, 113, 114

Wallich, Nathaniel, 112, 113
Wandelaar, J., 117
Wedel, Rev. Theodore O., 36
Weiditz, Hans, 101
Went, F. W., 25, 48, 81, 87, Review of Julian A. Steyermark's "Vegetational History of the Ozark Forest," 89
What's in a name? 83
Woodcut, 98
Woodson, Dr. Robert E., 26

BOARD OF TRUSTEES

ROBERT BROOKINGS SMITH, President
LEICESTER B. FAUST, Vice-President
HENRY B. PFLAGER, Second Vice-President
DANIEL K. CATLIN
DUDLEY FRENCH
HENRY HITCHCOCK
JOHN S. LEHMANN
ROBERT W. OTTO
WARREN MCKINNEY SHAPLEIGH

EX-OFFICIO MEMBERS

ETHAN A. H. SHEPLEY,
Chancellor of Washington University
GEORGE L. CADIGAN,
Bishop of the Diocese of Missouri
RAYMOND R. TUCKER,
Mayor of the City of St. Louis
H. LEE BRUNS
President of the Board of Education of St. Louis
STRATFORD LEE MORTON,
President of the Academy of Science of St. Louis

Secretary
OSCAR E. GLAESSNER
WALDO G. FECHNER, Asst. Controller

HORTICULTURAL COUNCIL

Clifford W. Benson, Paul Bernard, Mrs. Paul H. Britt, E. G. Cherbonnier, Phil Conrath, Hugh C. Cutler, Carl Giebel, Robert E. Goetz, Paul Hale, Earl Hath, Mrs. W. Warren Kirkbride, Mrs. Hazel Knapp, Emmett J. Layton, Robert W. Otto, G. W. Pennewill, Mrs. T. Randolph Potter, Robert Brookings Smith, F. W. Went, D. O'Gorman, Vice-Chairman, Francis McMath, Chairman.

STAFF

Frits W. Went.....Director
Hugh C. Cutler.....Executive Director
Edgar Anderson.....Curator of Useful Plants
Henry N. Andrews.....Paleobotanist
Clarence Barbre.....Instructor
Louis G. Brenner.....Arborist and Grounds Superintendent
George S. Bunting.....Taxonomist
Ladislaus Cutak.....Horticulturist and Greenhouse Superintendent
Josephine L. Davies.....Assistant in Education
Carroll W. Dodge.....Mycologist
Robert L. Dressler.....Taxonomist and Editor of ANNALS
John D. Dwyer.....Research Associate
E. L. Evinger.....Horticulturist in charge of Experimental Greenhouse
Robert J. Gillespie.....In charge of Orchids
Oscar E. Glaessner.....Controller
Paul A. Kohl.....Floriculturist
Emmet J. Layton.....Landscape Architect
Virginia McMahon.....Acting Editor of the BULLETIN
Viktor Muehlenbachs.....Research Associate
Norton H. Nickerson.....Morphologist
Kenneth O. Peck.....In charge of Visitors' Activities
Isabella T. Powell.....Friends of the Garden Secretary
George H. Pring.....Superintendent
Kenneth A. Smith.....Engineer
Julian A. Steyermark.....Research Associate
Frank Steinberg.....Superintendent of the Arboretum, Gray Summit
George B. Van Schaack.....Librarian and Curator of Grasses
Trifon von Schrenk.....Associate Curator of the Museum
Robert E. Woodson, Jr.....Curator of Herbarium

SOME FACTS ABOUT SHAW'S GARDEN

The Missouri Botanical Garden (the official name chosen by Mr. Shaw) carries on the garden established by Henry Shaw over a century ago at TOWER GROVE, his country home. It is a private institution and has no support from city or state. The old stone walls and cast-iron fences, the Linnaean House, the Museum, the Mausoleum, and the TOWER GROVE mansion all date from Mr. Shaw's time. Since his death, as directed in his will, the Garden has been in the hands of a Board of Trustees who appoint the Director.

The Garden is open every day in the year (except New Year's and Christmas) from nine A. M. until seven P. M. spring to fall and until six in the winter time though the greenhouses close at five. TOWER GROVE, itself, Mr. Shaw's old country home, is open from one until four, admission twenty-five cents, with special guides. The Garden is nearly a mile long and has several entrances. The Main Entrance, the one most used by the general public, is at Tower Grove and Flora Place on the Sarah bus line (No. 42). The Park Southhampton buses (No. 80), direct from downtown, pass within three blocks of this entrance and stop directly across the street from the Administration Building at 2315 Tower Grove Avenue. The latter is the best entrance for students, visiting scientists, etc. It is open to such visitors after 8:30 A. M., but is closed on Saturdays, Sundays, and holidays. The Cleveland Ave. gate, 2121 Tower Grove, is nearly always open, and there is a service entrance on Alfred Avenue, one block south of Shaw Avenue.

Since Mr. Shaw's time an Arboretum has been developed at Gray Summit, Mo., adjacent to State Highways 50 and 66. It is open every day in the year and has auto roads as well as foot trails through the wild-flower reservation. There is a pinetum and an extensive display of daffodils and other narcissi which are at their best in April.